



THE
ONTARIO WATER RESOURCES
COMMISSION

WATER POLLUTION SURVEY

of the

VILLAGE OF SPRINGFIELD

COUNTY OF ELGIN

1966

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Report on a water pollution
survey of the village of
Springfield in the county of Elgin.

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THE
ONTARIO WATER RESOURCES COMMISSION
REPORT ON A

WATER POLLUTION SURVEY

of the

VILLAGE OF SPRINGFIELD

in the

COUNTY OF ELGIN

DIVISION OF SANITARY ENGINEERING

1966

WATER POLLUTION SURVEY

VILLAGE OF SPRINGFIELD

INTRODUCTION

A water pollution survey was conducted in the Village of Springfield on May 6, 1966. The purpose of the survey was to locate and record all significant sources of water pollution within the village.

The Ontario Water Resources Commission conducts such surveys, routinely and upon request throughout the province, as part of its objective to eliminate existing and potential sources of pollution.

The procedure followed is to sample all known or suspected sources of pollution. When adverse conditions are found to exist, recommendations are made to assist the municipality in the initiation and development of a pollution abatement programme.

PREVIOUS SURVEYS BY OWRC STAFF

This is the initial water pollution survey of the Village of Springfield to be conducted by OWRC Staff.

INTERVIEWS WITH OFFICIALS

Interviews were held with Mr. R.M. Smith, Clerk-Treasurer of the Village, and Mr. I. Charlton, Public Health Inspector, with the Elgin-St.Thomas Health Unit.

VILLAGE OF SPRINGFIELD

The Village of Springfield, with a population of 518 and

a taxable assessment of \$366,000 (1966 Municipal Directory), is located approximately two miles east of Highway #73 on the Township Line Road between the Townships of Malahide and Dorchester South.

DRAINAGE

The village is part of the Catfish Creek Watershed. Surface water drainage is provided by the Simpson Drain which discharges to the Catfish Drain approximately two miles south of the village. The maintenance of the Simpson Drain is a joint responsibility of the Village of Springfield and the Townships of Dorchester South and Malahide. The village uses the Simpson Drain as its receiving stream for storm sewer discharges.

TOPOGRAPHY

A review of well driller records for Springfield indicates that the overburden is mainly clay. The topography slopes gently in a south-easterly direction.

WATER USES

The Simpson Drain is used to carry away surface-run-off water and to receive the discharges from the village storm sewer system.

WATER SUPPLY

The village does not have a common water supply system, consequently the residents rely on individual wells. In 1965, Commission staff attended a council meeting in the Village to discuss the provision of a communal water system.

SEWAGE DISPOSAL FACILITIES

Private septic tank systems are utilized in the absence of municipal sewage works. Information obtained at the time of the inspection indicated that septic tank overflow or raw sewage was being discharged to the storm sewer system. The sub-surface systems used in the village are generally hampered from operating efficiently due to the clay soil.

To date a municipal sewage treatment works has not been given serious consideration due to the high cost of installation relative to the small population.

INDUSTRY

There is no industry in the village which would have a waste discharge other than normal sanitary wastes.

SAMPLING PROCEDURE

Samples were collected from storm sewer outlets and a ditch drain in the village to determine whether contaminated matter was present in the discharges to the Simpson Drain.

The samples were submitted to the OWRC laboratory for chemical analyses and bacteriological examination to determine their sanitary quality.

INTERPRETATION AND SIGNIFICANCE OF LABORATORY

Bacteriological Examination

The membrane filter Technique is used to obtain a direct enumeration of coliform organisms. These organisms are normal inhabitants of the intestines of man and other warm-blooded animals.

They are always present in large numbers in sewage and are generally minimal in other water pollutants.

The results of the examination are reported a M.F. Coliforms per 100 ML.

The Commission's objective for a storm sewer discharge is a coliform density of not greater than 2400 organisms per 100 ML.

SANITARY CHEMICAL ANALYSES

Biochemical Oxygen Demand (BOD)

Biochemical Oxygen Demand is reported in parts per million (ppm) and is an indication of the amount of oxygen required for the stabilization of decomposable organic matter in the water. The completion of the laboratory test requires five days, under a controlled incubation temperature of 20°C.

The Commission's objective for a storm sewer discharge is an upper limit of 15 ppm.

Solids

The value for total solids, expressed in parts per million (ppm), is the sum of the values for the suspended and the dissolved matter in the water. The concentration of suspended solids is generally the most significant of the solids analyses in regard to sanitary quality of the water.

The effects of suspended solids in water are reflected in difficulties associated with water purification, deposition in streams, and injury to the habitat of fish.

The Commission's objective for water being discharged from a storm sewer is an upper limit of 15 ppm suspended solids.

Alkyl Benzene Sulfonate (ABS)

The presence of anionic detergents as alkyl benzene sulfonate (ABS) usually is an indication that domestic waste is present.

SAMPLE RESULTS

The laboratory results revealed that polluting material was present, to some extent, in seven of the ten samples collected.

Although an excessive BOD was only present in three samples, the high coliform counts and the presence of ABS in the samples indicate that partially treated or untreated wastes were present in the village's storm sewer system.

The storm sewers serving the older residential area and the business section exhibited the greater degree of polluted material.

SUMMARY

A water pollution survey of the Village of Springfield was conducted on May 6, 1966.

Samples were collected for chemical analyses and bacteriological examination from the storm sewers serving the village. The results of the samples indicate that polluting material was being discharged to the Simpson Drain.

CONCLUSION

The Commission is concerned with all sources of pollution which may gain access to any watercourse in the Province of Ontario.

Domestic sewage should receive adequate treatment before being discharged to a ditch or stream. Correction of the adverse conditions found during this survey may be accomplished by the severance of all private sewage connections to the storm sewers or the installation of sanitary sewers and a sewage treatment plant. In a great number of cases, the latter procedure is the more desirable.

RECOMMENDATIONS

It is recommended that the discharging of contaminated waste water to the Simpson Drain be discontinued.

Approved by _____

J. M. Timko, P.Eng.,
District Engineer,
Division of Sanitary Engineering.

Prepared by:

R.G. Quance.

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All analyses except pH reported
in ppm unless otherwise indicated.

TABLE I
VILLAGE OF SPRINGFIELD
DRAIN OUTLETS
MAY 6, 1966.

<u>Location</u>	<u>5-Day BOD</u>	<u>Total</u>	<u>SOLIDS Susp.</u>	<u>Diss.</u>	<u>Anionic Detergents as ABS</u>	<u>M.F. Coliform Count per 100 ml</u>
1. Drain Outlet N.W. of Bridge on Broadway Street.	19	520	5	515	2.0	910,000
2. Ditch Outlet N.E. of Bridge on Broadway Street.	62	1172	470	702	1.5	1,280,000
3. Drain Outlet S.E. of Bridge on Broadway Street.	4.0	480	1	479	0.1	3,700
4. Drain Outlet S.W. of Bridge on Broadway Street.	0.9	470	2	468	0.1	252
5. Drain Outlet W. Side of Simpson Drain between R.R. and Broadway Street.	3.6	480	3	477	0.5	18,300
6. Drain Outlet S.W. of Bridge on Main Street.	48	604	33	571	2.1	410,000
7. Drain Outlet N.E. of Bridge on Main Street.	9.0	582	3	579	0.5	1,380,000

TABLE I (Continued)

VILLAGE OF SPRINGFIELD

DRAIN OUTLETS

MAY 6, 1966.

<u>Location</u>	<u>5-Day BOD</u>	<u>Total</u>	<u>SOLIDS Susp.</u>	<u>Diss.</u>	<u>Anionic Detergents as ABS</u>	<u>M.F. Coliform Count per 100 ml</u>
8. Drain Outlet N.W. of Bridge on Main Street.	7.4	570	4	586	1.5	1,600,000
9. Drain Outlet 100 yds. N. of Main Street Bridge on E. Side of Simpson Drain.	8.2	768	9	759	0.1	-
10. Simpson Drain at Eastern or Downstream limit of Village.	3.4	350	12	338	0.2	-